

CHAPTER III

RESEARCH METHODOLOGY

This chapter provides an overview of the research methodology, which includes research design, data collection, data analysis and discussion, in search of the answer of whether modified question affects EFL learners' ability on describing things by the use of pre-head modifier and the ability by upper group differs significantly from lower groups. In addition, this study also searches for how modified questions are implemented in building up EFL classroom interaction in the instruction to give comprehensive understanding.

3.1 Research Design

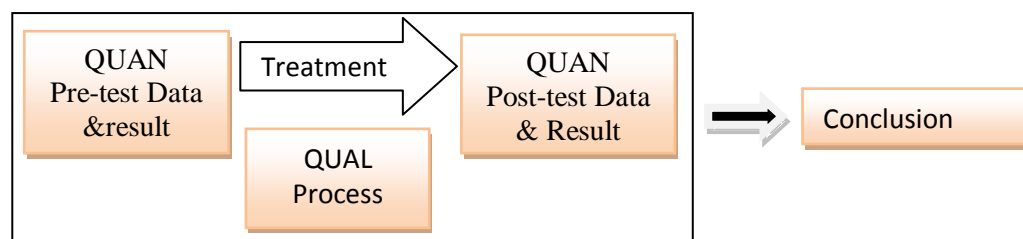
To tackle the research problems, this study used a *mixed method*. It is a method that concentrates on the collection, analysis and mixtures of the both data either in single or serial study. The point of using the combinational approach is due to that the approach can give better understanding than the single approach (Creswell and Clark 2007: 5). It is the definition which becomes a guidance to conduct the mixed method in this study because the investigator assumes that the use of mixed method will give comprehensive understanding on the research problems.

This study involved the non-random assignment of subjects of the two groups because, in a classroom research, it is excessive to ask the headmaster of the school to randomly assign students to special classes for the benefit of a

research (see Hatch and Farhady 1982: 22). Therefore, a *quasi experimental design* was chosen because participants were not selected randomly (see Creswell 1994:132 and Creswell 2003: 169).

There are 5 types of the mixed methods including triangulation, concurrent embedded, explanatory, exploratory and sequential embedded methods. The type of the method that is used to explore the experiment in this study is a concurrent embedded method. This means that qualitative data are embedded to the quantitative data to examine the process of a treatment in the experiment and qualitative data are collected concurrent with the implementation of the treatment (see Bergman 2008: 68) . The steps of data collection in concurrent embedded method can be observed in figure 3.1.

Figure 3.1 concurrent embedded design

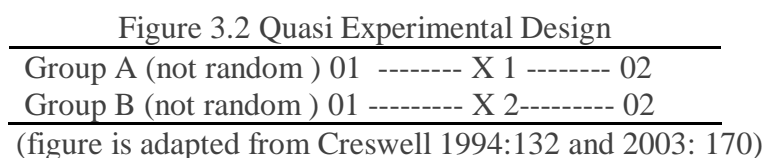


(figure is adapted from Bergman 2008: 68)

There are three variables in the experiment. First is an independent variable. It is the technique of instruction i.e. the use of modified questions to provide students a reciprocal classroom interaction from which they pick up how to describe things by the use of pre-head modifier correctly. Second is a moderator variable. It is a current knowledge of learners if it interacts with the independent variable in picking up the targeted skill. The last is a dependent

variable or something affected or influenced by the independent variable. It is a learners' ability to describe things by the use of pre-head modifier that a teacher intends to convey (see Hatch and Farhady 1982: 15).

This experiment used Pretest-Posttest Control Group Design. The tests were administered before and after treatment in the two groups. The experimental group was treated by a special treatment i.e. the use of spoken modified input through *reciprocal interaction* and the control group was treated by spoken unmodified input through *non-reciprocal interaction*. The design can be observed in Figure 3.2.



- O1 = pre-test,
- X 1 = special treatment
(spoken modified input through *reciprocal interaction*)
- X2 = non-treatment
(spoken unmodified input through *non-reciprocal interaction*)
- O2 = post-test.
- G. A = experimental group
- G. B = control group

3.2 Data Collection

There are three research questions. Data which are needed to answer the first research question is mixed data, the second research questions are quantitative ones and the data needed to answer the third research question are qualitative. The following sub-section will discuss the resource of the data,

treatment including the material and principles of treatment and procedures of data collection.

3.2.1 Subjects

The site of research is a state vocational school in Tasikmalaya. This vocational school has five programs, i.e. hotel accommodation, marketing, office administration, multi media and accounting programs. The present study focuses on the first grade of office administration program.

This program has two classes, each consisting of 40 students but only 30 students were included as participants in which all of them are female. The seven other students were excluded since their data were incomplete in either pre-test or post-test and three other students were excluded too to make all subjects female.

Based on the result of the entrance test, their English belongs to the average category. A preliminary observation of the class shows that they generally have an extrovert personality, namely they like to express their feeling in spoken form, to talk in front of many people and have high a self confidence.

3.2.2 Pre-test

A pre-test was administered before special treatment to experimental and control groups. In the test, subjects were asked to describe things by completing incomplete phrases, which was based on the picture and their linguistic description. In other words, they were provided pictures followed by linguistic

description. After that they were asked to complete incomplete phrases indicating the conclusion of the picture description (see appendix 14).

The pre-test was conducted to measure the initial ability of learners on describing things by the use of pre-head modifier both in experimental and control groups. Their initial ability needs ensuring whether they are balanced or not. Thus, if they have the similar initial ability, the differences of the effect between treatment of the experimental and control groups can be seen from the result of the post-test. The outline of the test items can be observed in Figure 3.3.

Figure 3.3 an outline of pre-test and post test item distribution

Theme	Complexity of description	Item number
1. Describing someone from originality; animal from nature	Single descriptor	1, 2
2. Describing car from age and color; a film from nature and originality	Double descriptors	3, 4
3. Describing someone from profession; a place from function	Single descriptor	5,6
4. Describing a table from shape and material; a chair from color and material	Double descriptors	7, 8
5. Describing people from activity	Single descriptor	9, 10
6. Describing a car from events		11, 12
7. Describing a house from nature	Double descriptors	13
8. Describing a person from age and number	Triple descriptors	14
9. Describing a sedan from nature and classification	Double descriptors	15
10. Describing animal form nature.	Triple descriptors	16
11. Describing tables from Quantity and number; girls from number and activity	Double descriptors	17,18
12. Describing women from quality and number; coins from shape and number		19, 20

Figure 3.3 shows the distribution of the test items. The test items consist of 20 completion test items (see appendix 14). Themes of the test were taken from material which would be taught with a balance distribution. Each theme is represented with two test items.

To keep a validity and reliability of the result, a study must be measured with a valid and reliable instrument. Thus the instrument, in this case the set of the items, is tested in the validity, reliability and test item analysis to measure the discrimination and difficulty index.

Firstly, to measure validity of the test item, it was consulted to the supervisors to measure face and construct validity. Meanwhile to measure content validity, the outline of test items was made as described in Figure 3.3 (see Sugiyono 2009: 352).

Figure 3.4 the formula of calculating reliability of test items
with *spearman Brown's formula*

$$r_i = \frac{2rb}{1+rb}$$

ri = internal reliability of the test items

rb = Pearson Product Moment Correlation between first and second half

Secondly, measurement of a reliability index of the pre-test items was measured by the use of *split-half* technique. At first, the scores were split up into the groups of even and odd numbers. This split techniques was conducted because the first even number and first odd number are identical and they tested the same theme and so on. Then the scores of even numbers were correlated to those of odd numbers by the use of *Pearson Product Moment* through SPSS 17. After that the

result were entered to *spearman Brown's formula* (see Sugiyono 2009: 355) as indicated on Figure 3.4. The calculation as indicated in table 2 in appendix 1 showed that the reliability index is 0.97. The value of r_i (0.97) is greater than that of r-table (with $n = 34$ and df 0.05 is 0.339). This means that pre-test items are extremely reliable.

Figure 3.5 the formula of calculating *discrimination index* of test items and the criterion of the interpretation.

The formula of the *discrimination index*:

$$D = \frac{\text{Correct (U)} - \text{Correct (L)}}{n}$$

D = Discrimination index
n = number of candidate in one group
U = Upper half
L = Lower half

Arikunto's criterion of interpretation on *discrimination index*

D = 0.00 to 0.20 is 'poor'
D = 0.20 to 0.40 is 'fairly good'
D = 0.40 to 0.70 is 'good'
D = 0.70 to 1.00 is 'very good'.

The last is test item analysis. The analysis was used to measure the *discrimination* and *difficulty index*. To find out whether the test items discriminate upper to lower groups, *Discrimination index* was calculated with the a formula as written in Figure 3.5 (see Heaton 1988:180). Then the result of the calculation was interpreted by the use of Arikunto's criterion (1987: 221). See Figure 3.5.

Figure 3.6 the formula of calculating *difficulty index* of test items and the criterion of the interpretation.

The formula of the *difficulty index*

$$FV = \frac{R}{N}$$

FV = the percentage of the total number of correct response R = the number of correct responses, and N = the total number of responses. The criterions for interpretation are adopted from Arikunto : FV from 0.10 to 0.30 is very hard FV from 0.31 to 0.70 is fairly hard FV from 0.71 to 1.00 is easy
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To find out the proportion of examinees who answered the item correctly, the *difficulty index* was calculated by the formula as written in Figure 3.6 (see Heaton 1988: 178). Then it was interpreted by the use of Arikuntos' criterion (1987: 210). See Figure 3.6. It refers to the percentage of the total number of correct responses to the total of students taking the test, which can range between 0.0 and 1.0 (or from 0% to 100%). This indicates that the higher value of the difficulty index, the greater the proportion of examinees respond to the item correctly.

Manual calculation of the *difficulty* and *discrimination index* of test items indicates that only number 2 needs revising because it has low discrimination index (see table 3 in appendix 1). Number 2 was revised because there seemed a word *domestic* that was assumed to be unknown by the most of subjects so it does not discriminate the upper and the lower as shown with following quotation. The word is replaced with a more familiar word, *small*.

Previous item: *This is a lizard. It is domestic. It is reptile. Lizard is a ____ ____.*
 Revised item: *This is a lizard. It is small. It is reptile. Lizard is a ____ ____.*

In conclusion, the pre-test items are valid and reliable and could be used for the study.

3.2.3 Treatment

Treatment constitutes a process of teaching English with the topic ‘describing things and people’ at the first grade of a vocational school. The treatment used pictures that were related to the topic and the pictures were served as medium to elicit interaction leading to describe pictures by the use of pre-head modifier.

The treatments were applied to experimental and control groups. The treatment in the experiment group was the exposure of *spoken modified input* through *reciprocal interaction*. This is a teaching-learning process in which a teacher facilitated his students’ language experience by drawing them to involve into classroom interaction in order that they try to describe the pictures. The interaction is a process of presenting examples of language rules in direct language experience (see appendix 4). In other words, language input were exposed through a direct use of language enhanced in teacher-led classroom interaction to examine the effect of modified teacher questions in negotiating the description of pictures by the use of pre-head modifier (see Alwright 1988: 13).

The latter, the treatment in control group was the exposure of *spoken unmodified input* through *non-reciprocal interaction*. This is a teaching-learning process in which teacher expose the input by describing picture by the use of pre-head modifier non-reciprocally while Students just listens their teacher’s presentation (see appendix 4).

Figure 3.7 description of treatment

Treatment	Theme	Lesson plan
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Pre-meeting	Pre-test	
Meeting 1	Describing t-shirts from color; Describing cars from color and age or quality; Describing jackets from color and material; Describing films from originality and nature; Describing people from profession; Describe animals from nature.	1
Meeting 2	Describing guitars from the characteristics and color; Describing people from profession; Describing water from originality; Describing shoes from function; Describing chairs from color and material; Describing vases from material and shape; Describing people and animal from activity; Describing cars and ships from event; Describing houses and animals from nature; Describing the other name of military senior officers from nature	2
Meeting 3	Describing people from number and profession, activity and quality ; Describing jackets from number, color and material; Describing animals from activity; Describing chair, glasses, table from number, color and material; Describing house from number and nature; Describing students from number and classification; Describing money from number and nature; Describing buses from number and nature; Describing books from number and nature; Describing guitar from number, color and nature; Describing vases from number, material and shape; Describing wall clock from number, color and shape	3
Post-meeting	Post-test	

Materials in the treatment were based on the syllabus for the 1st grade of vocational school (SMK) issued by *Badan Standar Nasional pendidikan (BSNP)*.

It is ‘mentioning and describing things’. This competence signals that learners

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must be able to describe things after instruction. These materials are developed as described in figure 3.7.

3.2.4 Recording of Teaching-Learning Process

A classroom recording is the secondary technique of collecting data to gain a deep comprehension of the quantitative findings. It is applied to record a verbal interaction in the experimental and control groups. The verbal data will be recorded from how the teacher exposed the language input to how learners described things as language output (see Genesee and Upshur 1996: 77).

Data of recoding were obtained from verbal classroom interaction of the researcher who was being involved in an experimental and control groups (see Sugiyono 2007: 64). The recording resulted in raw data i.e. a set of video-recording which consisted of six folders of recording from three sessions of the classes. Each folder contains some files of recording. Then, the recording was transcribed. The transcription was divided into six sessions which consisted of three of experimental and of control groups (see appendices 8, 9, 10, 11, 12 and 13).

Social situation belongings to object of observation covers three components i.e. place, actor and activities (see Sugiyono 2007: 68). The place was the classroom where the first grade of office administration program in a state vocational school studied. Actor was teacher and students. Last, activities cover teacher activities in enhancing teacher-led classroom interaction by the use of

modified question and students' comprehension on lesson which is indicated with verbal responds.

3.2.5 Post-test

A post-test was administered after treatment in the experimental group and control groups to measure how long subjects can describe things by the use of pre-head modifier. The procedure of the preparation of the post-test is like pre-test. Meanwhile, the items in post-test are different from those in pre-test but they are identical (see pre-test and appendix 14 & 15). The similarities are in the analysis of the test item, in which, the post-test items were tried out to be analyzed. The analysis included validity and reliability test and the analysis of *discrimination* and *difficulty index*. To keep the validity, the test items were consulted to the supervisors and made the map of the distribution of items as indicated in Figure 3.3. After that reliability of the test was measured by calculating the result of the try-out through SPSS. 17. Then the results were calculated to find out the *discrimination* and *difficulty index* (for detail, see section pre-test).

Aspect of reliability was measured with a split-half method as conducted to pre-test items analysis. The calculation as indicated in table 2 of appendix 2 showed that the reliability index is 0.92. The value of r_i (0.92) is greater than that of r-table (with $n = 38$ and $df 0.05$ is 0.320). This means that post-test items are extremely reliable.

The last, based on the manual calculation of the *difficulty* and *discrimination index* of the test item analysis as indicated in Table 3 of appendix 2, only number 2 needs revising because it has low discrimination index. Number 2 was revised because there seemed a word *wild* that was assumed to be unknown by the most of subjects so it did not discriminate the upper and the lower as shown in following quotation. The word was replaced with a more familiar word, ‘dangerous’.

Previous item: *This is a crocodile. It is wild. It is reptile. Crocodile is a __.*

Revised item: *This is a crocodile. It is dangerous. It is reptile. Crocodile is a __.*

In conclusion, the instrument is valid and reliable and can be used for the study.

3.3 Data Analysis

There are two types of data in this study, i.e. quantitative and qualitative data. The quantitative data were collected through pre-test and post-test, while qualitative data were collected through video-recorded observation during the treatments in the two groups. They will be discussed in the following sub-section.

3.3.1 Test Data

Test data include those from pre-test and post-test administered to the two groups .the data were compared in several ways. Firstly, the scores of all groups were tested to identify their variances with SPSS 17 through *one-sample Kolmogorov-Smirnovtest* and *levene statistic* of *one-way annova*. Secondly, pre-test of

experimental group versus that of the control group was calculated with *independent sample t-test* to measure the initial ability of the two groups. Thirdly, post-test of experimental group versus that of the control group was calculated with *independent sample t-test* to measure the final ability of the two groups. The last, the two sets of post-tests were calculated with *Two-way ANOVA* to examine moderator variable, i.e. if the current ability of describing things by the use of pre-head modifier affects the final ability.

3.3.2 Data of Recording

Recording data were obtained from transcription of interaction in both experimental and control groups. The data have been analyzed in two categories. Former is the analysis for uncovering the effect of modified questions on the learners' ability to describe things by the use of pre-head modifier from qualitative aspect to support quantitative findings. The analysis were conducted by comparing the success of teacher leading learners to describing things through reciprocal interaction or not in the treatment process and comparing the learners' performances in describing thing by the use of pre-head modifier in the experimental group to those in the control group (see tables 3.1 and 3.2). The latter is to uncover the implementation of modified teacher's question in treatment.

Table 3.1 the summary of question-led descriptions in experimental group

	Session 1	Session 2	Session 3	Total	
				F	%

Successful meaning negotiation					
Unsuccessful meaning negotiation					
Total					

To uncover the effect of modified questions qualitatively, there are two kinds of qualitative data. Firstly, data recording of experimental group was transcribed and analyzed to measure the strength of questions in leading learners' to describe things by the use of pre-head modifier. The data consisted of some transactions which were categorized into successful and unsuccessful meaning negotiations or transactions. Then, they were quantified in a table as illustrated in Table 3.1. The quantification was conducted to reveal their frequency of the succeeded during the special treatment. The frequency was slotted per session so the table showed it in detail apart from the total. Then, they were described qualitatively.

Table 3.2 the summary of the comparison learners' description in experimental group to those in control group

	Experimental Group		Control Group	
	F	%	F	%
The use of Pre-head modifier in describing things				
The lack of pre-head modifier in describing things				
Total				

Secondly, the qualitative data which is used to uncover the effect of modified questions qualitatively is data from learners' performance of the two groups in describing things. The data were analyzed to measure the strength of

modified questions in leading learners' to describe things. The data were categorized into describing things by the use of pre-head modifier and without pre-head modifier. Then, they were quantified in a table as illustrated in Table 3.2. The quantification was conducted to reveal the frequency of the use of pre-head modifier in describing things during the special treatment compared to non-treatment. They were described qualitatively.

The last analysis is to uncover the implementation of modified teacher's question in the treatment. The data which is needed is the transcribed verbal data which was treated in three steps. Firstly, the transcription was identified about the things belonging to the types of modified questions (see table 3.3, 3.4 and 3.5) and their use in managing classroom interaction (see table 3.6) by highlighting.

Table 3.3 Descriptive Quantification of Linguistically Modified Question

Linguistic modification	Session 1	Session 2	Session 3	Total	
				F	%
1. Self repetition					
2. Self rephrasing					
3. Self decomposition					
Total					

Secondly, the modified questions were sub-categorized into linguistically modified questions including rephrase, self-repetition (see Chaudron 1988: 128) and decomposition (see Wu, 1993: 56). The sub-category of linguistic modification was quantified in a table as illustrated in Table 3.3. The quantification was conducted to reveal their frequency during the special

treatment. The frequency was slotted per session so the table showed it in detail apart from the total. Then, they were described qualitatively.

Table 3.4 Descriptive Quantification of Interactionally Modified Question

Interactional modification	Session 1	Session 2	Session 3	Total	
				F	%
1. Comprehension check					
2. Clarification request					
a. Why-yes/no question					
b. Rising intonation					
c. Tag or statement					
3. Confirmation check					
a. Other repetition					
b. Other paraphrase					
4. Probing question					
Total					

Thirdly, the modified question was sub-categorized into interactionally modified questions including comprehension checks, clarification requests, confirmation checks (see Pica et.al. 1985: 125) and probing question (see Pollard 2005: 302). The sub-category was quantified in a table as illustrated in Table 3.4. The quantification was conducted to reveal their frequency during the special treatment. The frequency was slotted per session so the table showed it in detail apart from the total. Then, they were described qualitatively.

Table 3.5 Descriptive Quantification of modified Questions

Modification of Question	Session 1	Session 2	Session 3	Total	
				F	%
1. Linguistic modification					
2. Interactional Modification					
Total					

Fourthly, the modified question was categorized into linguistic and interactional modification. The category was quantified in a table as illustrated in Table 3.5. The quantification was conducted to reveal their frequency during treatment. The frequency was slotted per session so the table showed it in detail apart from the total. Then, they were described qualitatively.

Table 3.6 Descriptive Quantification of Classroom Interaction Management

Management of Classroom interaction	Session 1	Session 2	Session 3	Total	
				F	%
3. Discourse Management					
4. Repair Management					
Total					

Then, the pattern of the use of modified question in managing classroom interaction was classified into repair and discourse management (see Ellis, 1994: 257). The classifications were quantified in a table as illustrated in Figure 3.6. The quantification was conducted to reveal their frequency during treatment. The frequency was slotted per session so the table showed it in detail apart from the total. Then, they were described qualitatively.